Evaluation of the CCNR Questionnaire

Introduction of Inland AIS and Electronic Chart Display Systems on the river Rhine

CCNR Workshop, November 17th 2017

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01

CCNR QUESTIONNAIRE

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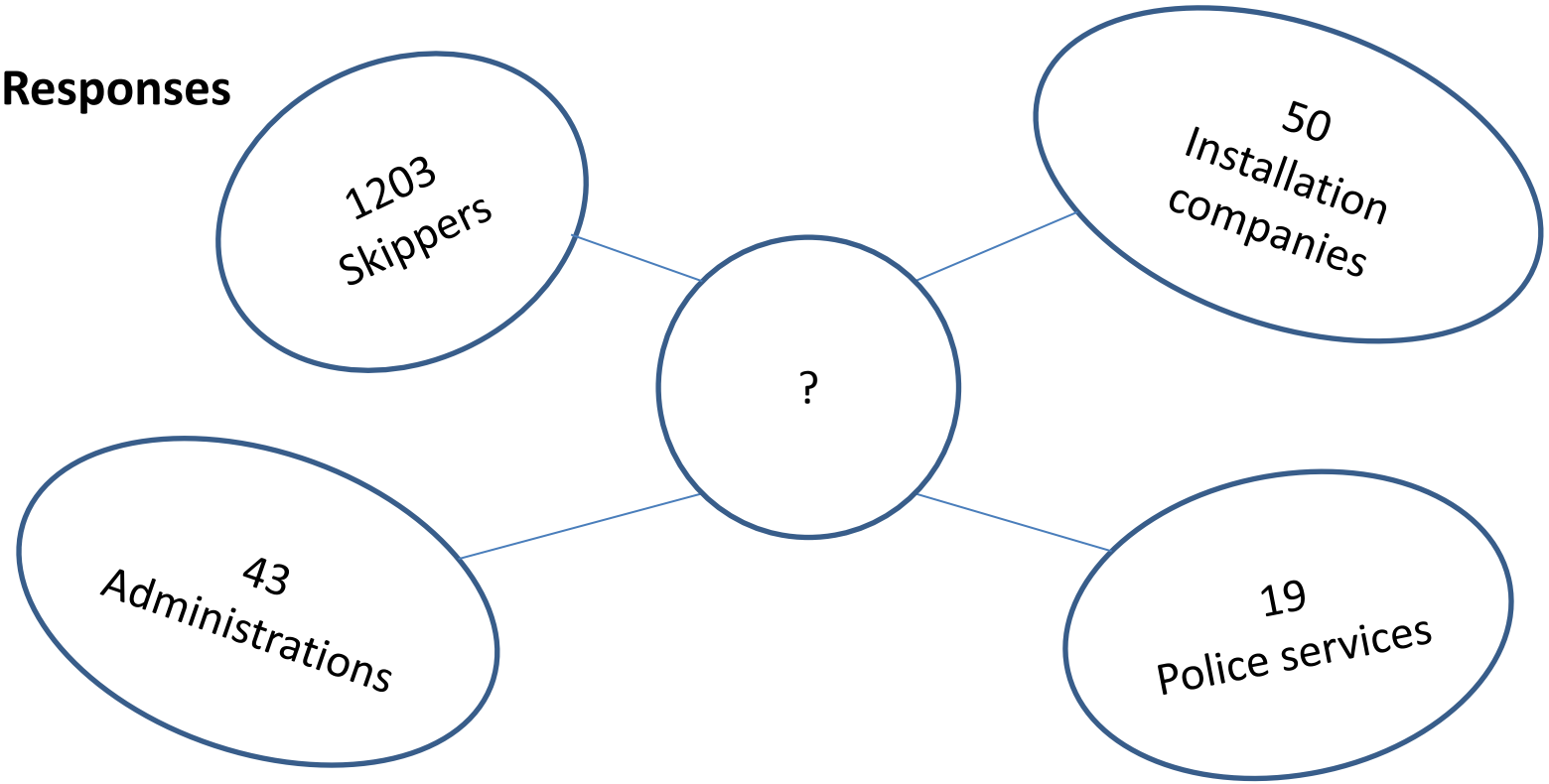
- Introduction of Inland AIS by several European subsidy programs
- December 1st 2014: CCNR carriage requirement for Inland AIS and Inland ECDIS or comparable electronic chart display device
- Winter 2016/2017: CCNR questionnaire regarding the introduction of these requirements
- November-December 2016: Questionnaire published on CCNR website and promoted by VNF, BTB, WSV and Port of Basel
- Specific questionnaires for Skippers, Installation Companies, Waterway Administrations, Waterway Police / Enforcement
- Up to 80 questions, partly further detailed

→ **a big thank you to all the contributors who filled in the questionnaires**

Responses



Target group	Number of use reactions
Skippers	1203
Fairway Authorities	43
Enforcement and Police services	19
Installation companies	50

Who did respond?

→ 1203 skippers

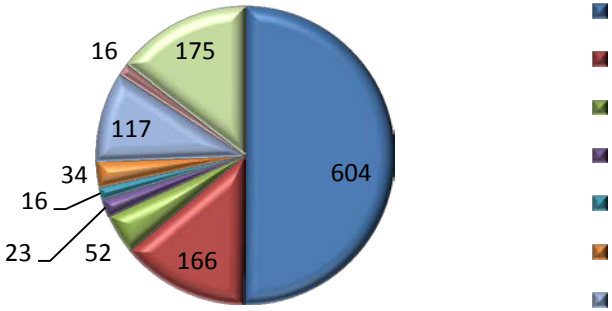
- sailing on the river Rhine
  as well as in the CCNR Countries
- cargo vessels, tankers, passenger vessels

→ 50 out of 100 installation companies

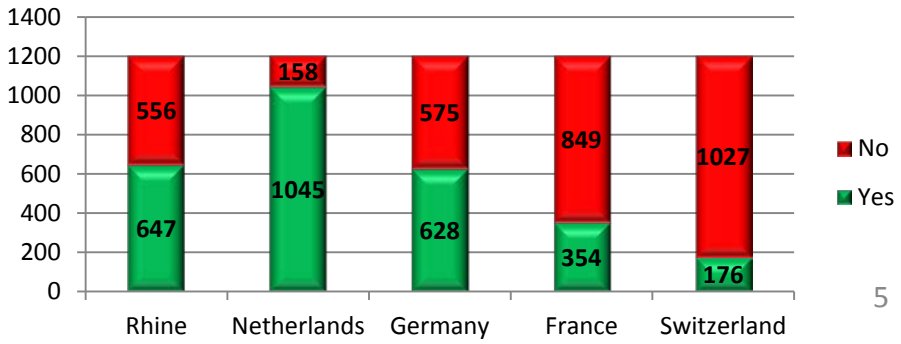
→ Police and authorities

- NL, F, CH, DE
- RIS centers, lock keepers, port authorities, administrations

Number of skippers that have responded



Do you sail in these areas? (multiple answers are possible)



Representativeness

$$n = \frac{N * Z^2 * p(1-p)}{Z^2 * p(1-p) + (N-1) * F^2}$$

- Population = N
- % of failure = F
- Spread = p
- Response = n
- Reliability = Z

- Questionnaire for skippers

$$n = \frac{8000 * (1{,}96)^2 * 50 * 50}{1{,}96^2 * 50 * 50 + 7999 * 5^2}$$ = 366,1 => 1023 responses min. (1203 received)

- Questionnaire for installation companies

$$n = \frac{111 * (1{,}96)^2 * 50 * 50}{1{,}96^2 * 50 * 50 + 110 * 5^2} * \sqrt{\frac{111-87}{87-1}}$$ = 24,1 => 50 responses min. (50 received)

Free text / comments

Additional written comments to some questions were possible
Several questions got many comments
The number of comments per question are categorized:
6 categories: from very few (<5) to extensive (> 101)

02 GENERAL OVERVIEW

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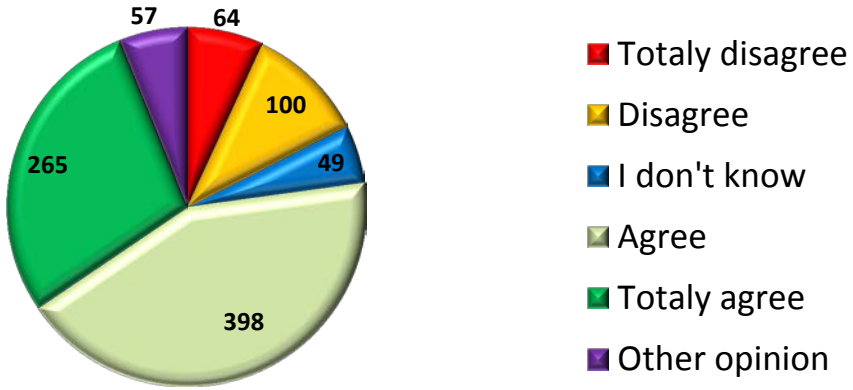
General opinion of the skippers

Most skippers have become familiar with the equipment:

- majority of problems resolved
- satisfied with the system
- could not do without it any more

The implementation of Inland AIS / electronic chart contributes to a safer and quicker navigation?



However Inland AIS

- is intended for navigational information
- is not a navigation system
- has limitations, can be wrong or can fail (not 100% reliable)

→ Inland AIS does not replace visual observation, radar or VHF radio

Combination of Inland AIS and electronic chart display system

The system makes a significant contribution to improved safety:

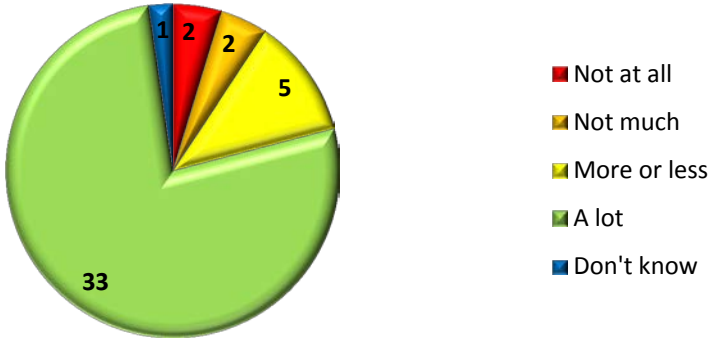
- clear image of the location
- provides name and speed
- excellent aid to navigation
- enables to see
  - far ahead
  - round a bend
  - behind an obstacle

Efficiency / protection of environment:

- advantages for lock planning
- particularly fuel saving and environmental considerations

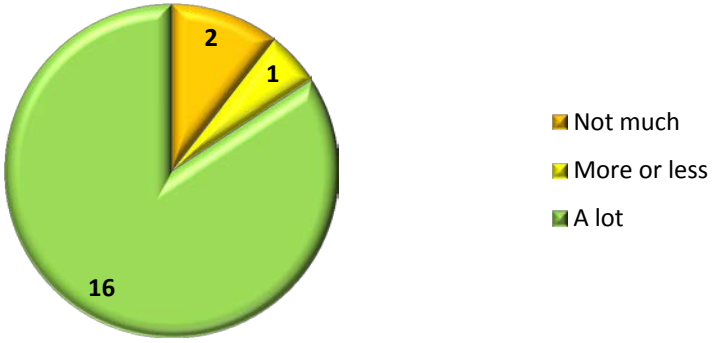
Fairway Authorities

Does the combination of Inland AIS and an electronic chart display system contribute to a safer navigation?



Enforcement and Police services

Does the combination of Inland AIS and an electronic chart display system contribute to a safer navigation?



Combination of Inland AIS and electronic chart display system

Danger of relying too much on the equipment:

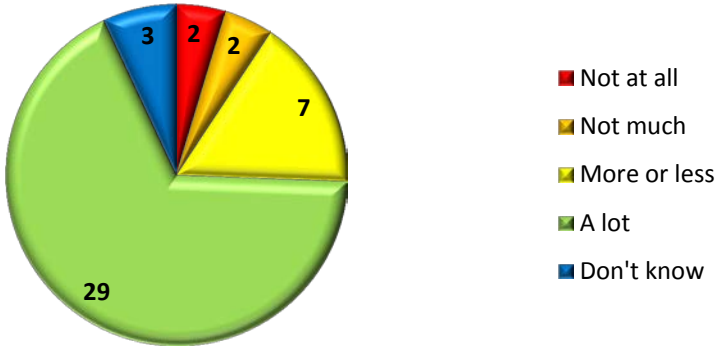
- using it like a kind of radar
- hardly looking through the window
- assuming that one will be seen
- assuming nothing on the display = nothing ahead

However:

- AIS is not 100% reliable
- not all vessels are equipped

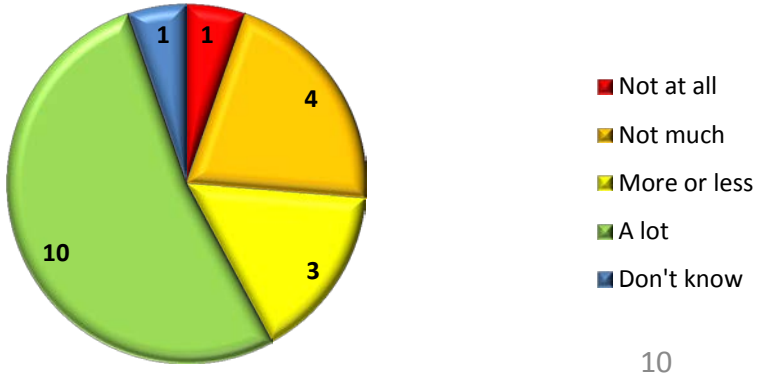
Fairway Authorities

Does the combination of Inland AIS and an electronic chart display system contribute to a better trafic management?



Enforcement and Police services

Does the combination of Inland AIS and an electronic chart display system contribute to a better relationship between skippers?



The use of the VHF

With AIS, skippers know in advance which vessels they'll encounter, and can contact the vessels via VHF

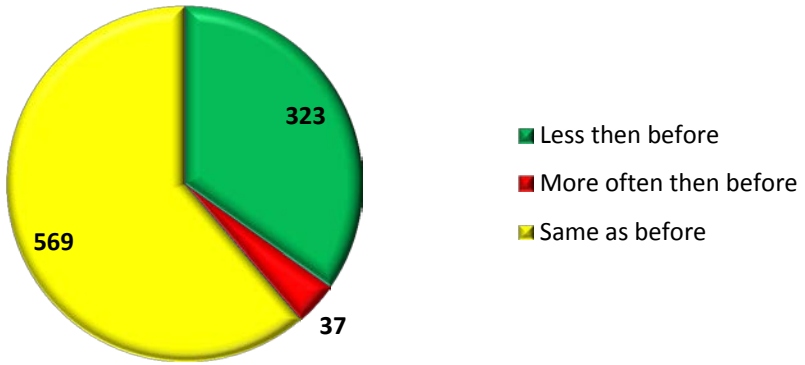
- arrangements for overtaking
- arrangements to pass each-other

However, decrease in use of VHF:

- Skippers assume
  - they see all vessels on the screen
  - all vessels see them on the screen
- Less notification of other vessels leaving ports or in narrow sections
- Less agreement on how to proceed in situations with poor visibility or in bends

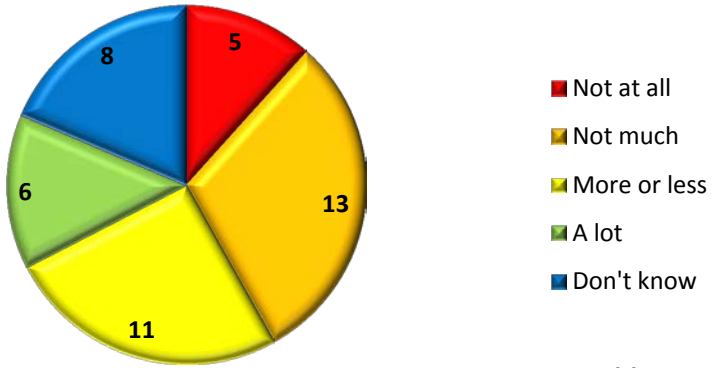
Skipper

How do you use your VHF since the implementation of AIS?



Fairway Authorities

Does the combination of Inland AIS and an electronic chart display system contribute to a reduced usage of VHF?



03

EXPERIENCE ON BOARD

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Installation of the equipment

Inland AIS:

- 61.9% got instructions by the installer on the use of the Inland AIS device
- 33.3% received no instruction
- 4.8% were informed in different ways

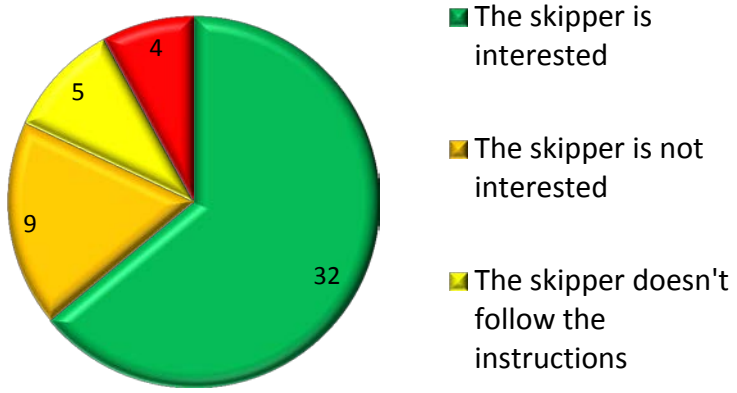
Electronic chart display system:

- 45,4% got instructions on the use of the electronic chart display system
- 44,2% received no instruction
- 10,3% were informed in different ways

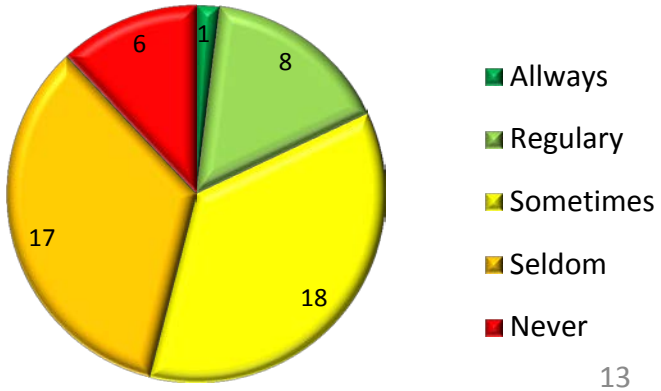
- 86.9% received a **certificate** after installation
- 87,5 % have a **user manual** of the systems on board

Installation companies

What is your experience regarding giving initial instruction to skippers on the use of the Inland AIS device on board their vessels?



Do other members of the staff/crew take part on the training?



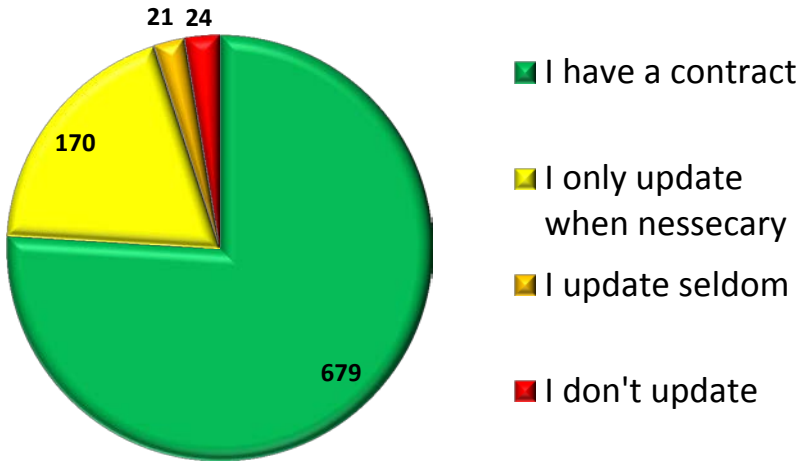
Use of an electronic chart display system on board

Electronic chart display systems are:

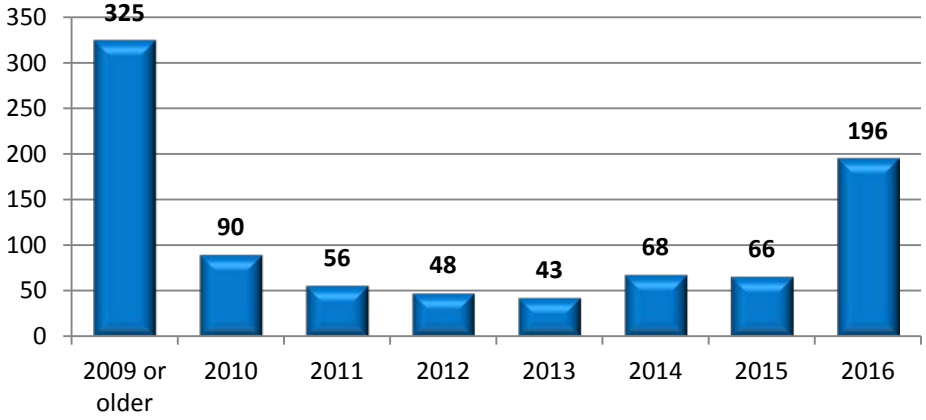
- in majority Inland ECDIS systems
- 3,4% open source
- 12,3 % other systems

Use	Number of respondents	percentage
Information mode	765	85,3 %
Navigation mode	37	4,1 %
Both modes	95	10,6 %

How do you update your electronic chart?



What is the year of installation of your elctronic chart device?



Setting of the Navigation Status

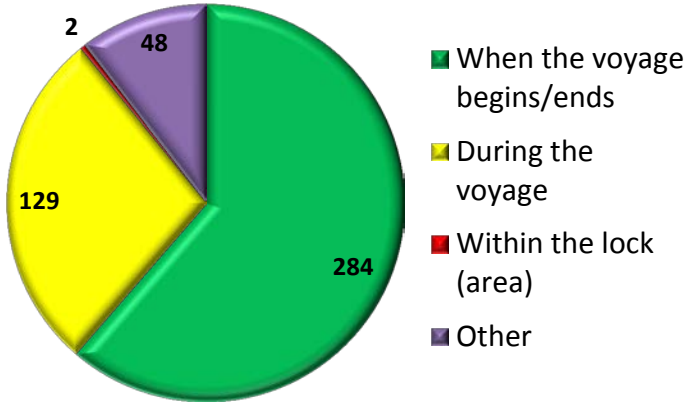
Adjusting the navigation status
is not self-evident:

- unnecessary and pointless
- obvious, from the speed,
  whether a vessel is sailing or at anchor
- should be generated automatically

Update method:

- 40% with the Inland AIS device
- 55% with the electronic chart display system

When do you change your setting "Navigation status"?



Changing the Status	Number of respondents	Percentage
Always	138	13,2 %
I sometimes forgot it	190	18,2 %
Sometimes	139	13,2 %
Never	579	55,4 %

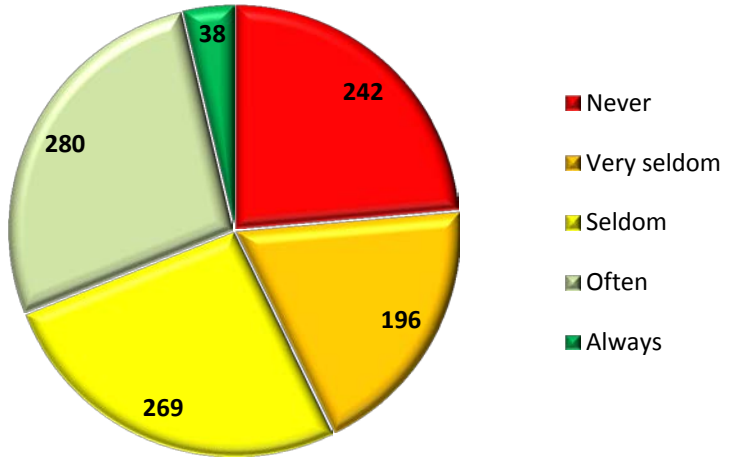
Checking if the Inland AIS information is transmitted

Regular check if the Inland AIS device is transmitting the correct data is required

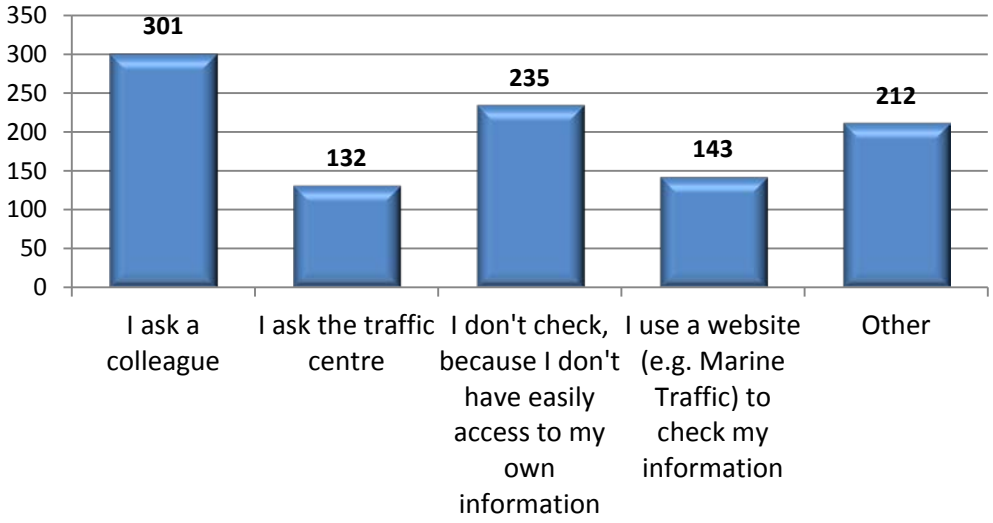
It seems not obvious how to do this

Skippers often inform each other when the Inland AIS device is transmitting incorrect data

How often do you check the information that is transmitted by your Inland AIS device?



How do you check if your Inland AIS device is transmitting the correct information?



Data broadcasted by the onboard Inland AIS station

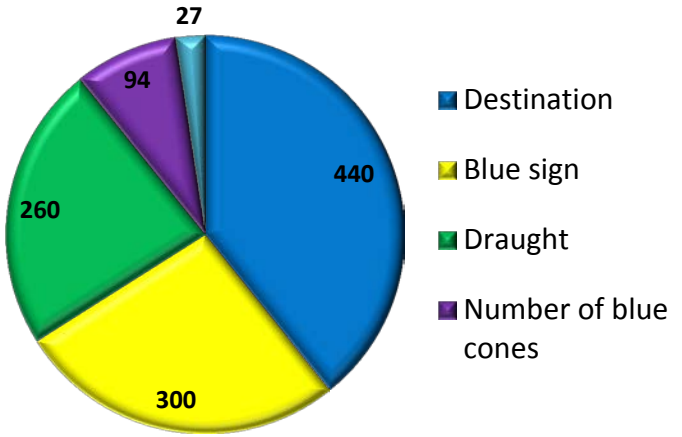
Most skippers agree with the required data to be transmitted

However it can be difficult to change this data

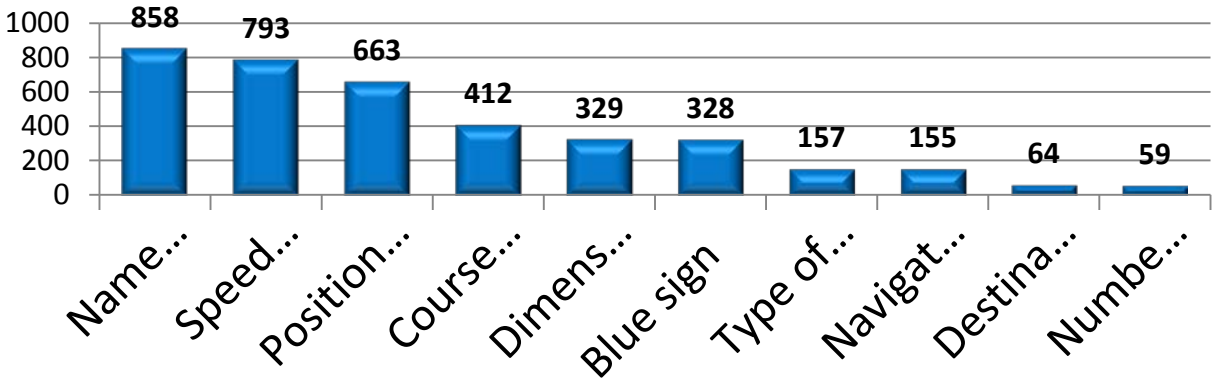
Displaying all data may lead to a very crowded display, especially in ports or busy areas

Names should be given without prefixes (e.g. without MV)

Which extra information do you transmit with your Inland AIS device?



Which Inland AIS information is the most important for you and other users of the fairway?



Quality of the electronic chart displayed on board

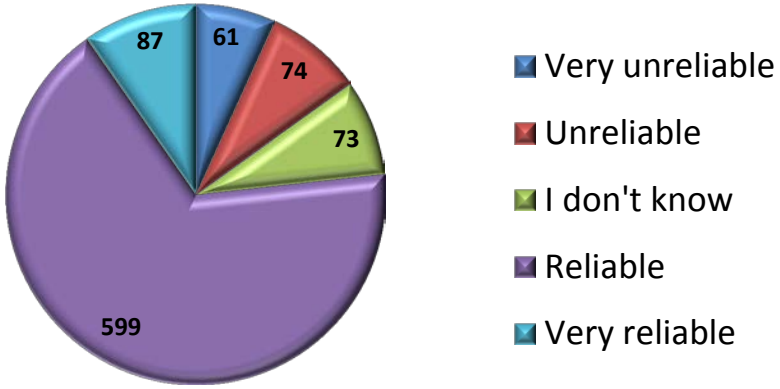
Critical comments regarding the electronic navigation charts:

- many out-of-date
- contain lots of errors
- information is missing
  e.g. water depth, navigation channel

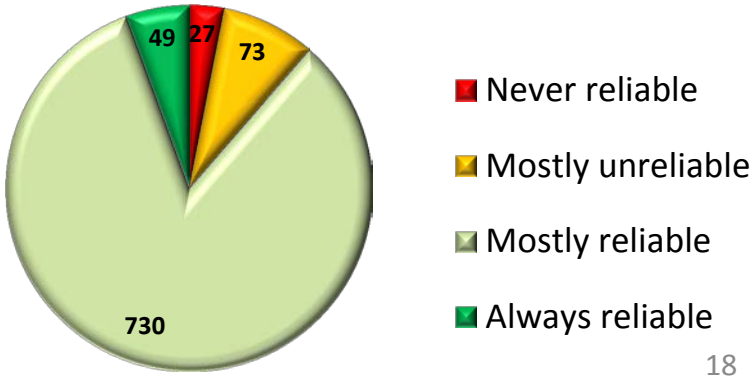
Proposals:

- charts renewed more often
- more interim updates
- greater degree of uniformity of symbols, in particular types of vessel
- distinction between commercial vessels and recreational craft

How reliable is the information in the electronic chart?



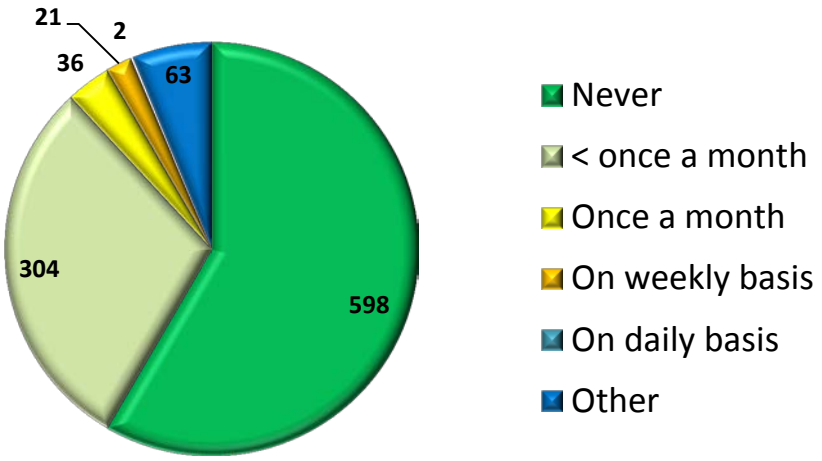
What is your experience with the quality of position information?



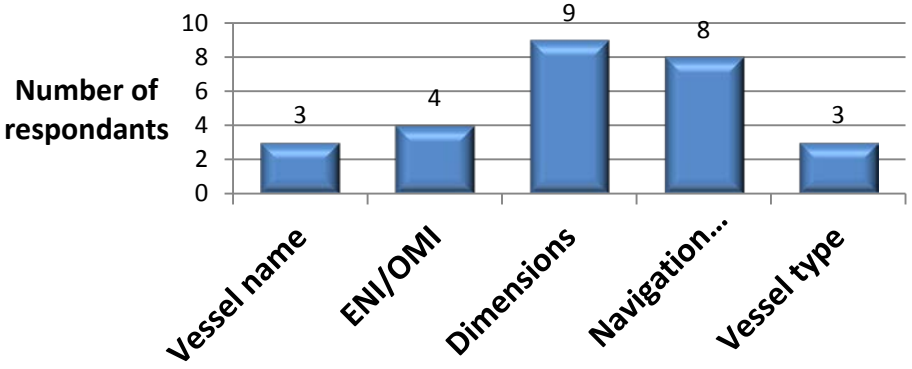
Quality of information

- 58.3% skippers: are never warned that their AIS signal is incorrect
- police and authorities: not all skippers can correct the data immediately - sometimes due to the missing manual
- some skippers suggest an (acoustic) alarm

How often are you informed that your AIS information is not correct?



What data are the most frequently badly configured?



Police: Vessels with broken down Inland AIS device

Number of Services	Vessels noticed
5	5
1	10
1	15
4	20
1	50

04 TECHNICAL ISSUES

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Technical problems with the inland AIS device

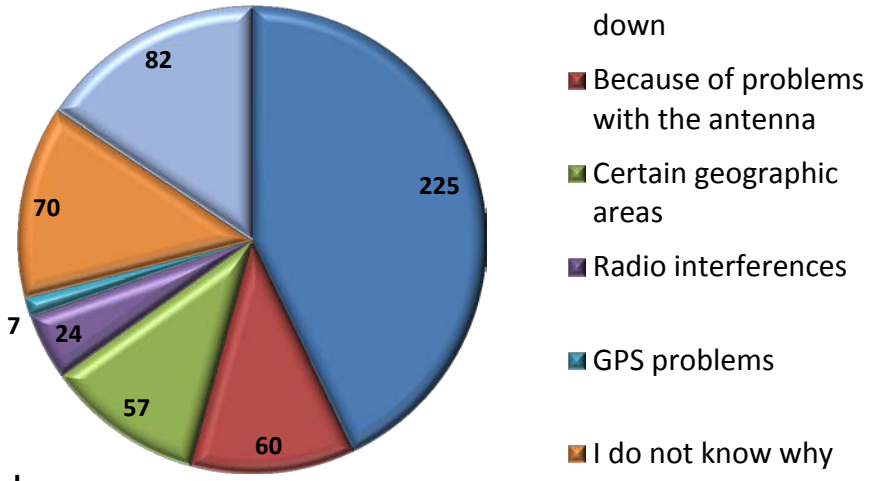
Unexpected high number of technical problems
- 54,2% (562 skippers) had some technical problems
- 45,8% (474 skippers) had no technical problem

57.1% of the problems fixed by the installer
- breakdown of the Inland AIS
- antenna problems
- vessels 'frozen´ on the chart
- interference with TV

A regular reset of the device is not a solution

Some problems are not yet identified
- areas (black spots) where no AIS signal is visible
  → needs further investigation

What was the reason for the technical problems with the Inland AIS device?



Breakdown of the Inland AIS device

Number of respondents	Number of breakdowns
101	1
82	2-5
11	6-10
9	>10

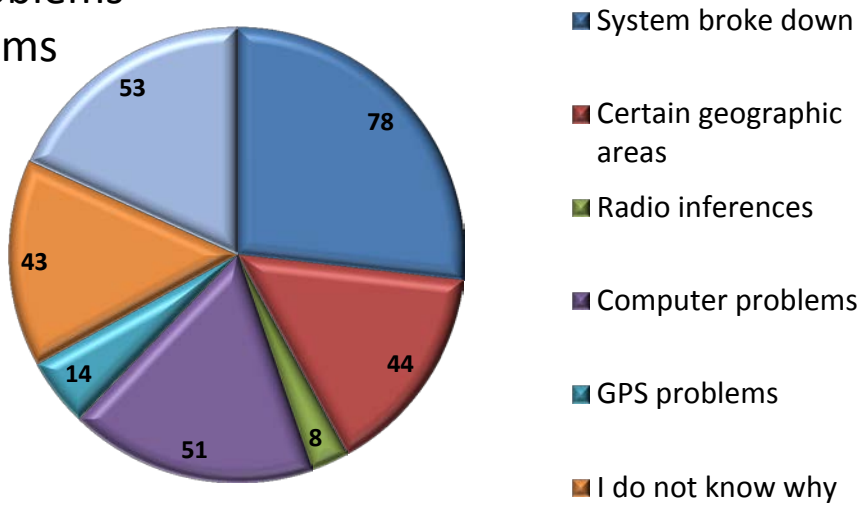
Technical problems with the Electronic chart display systems

- 34,0% (302 skippers) had some technical problems
- 66,0% (585 skippers) had no technical problems

24,0% of the problems fixed by the installer

- outdated software (e.g. Window XP)
- outdated computers
- connection problems computer<->AIS
- computers crashing
- cables are often a problem
- application software not always good

What was the reason for the technical problem?



Number of respondents	Number of breakdowns
59	1
152	2-5
37	6-10
17	11-20
35	>20

Installation of Inland AIS

49 companies indicated the number of Inland AIS devices they repaired or replaced

Problems during the installation and configuration:

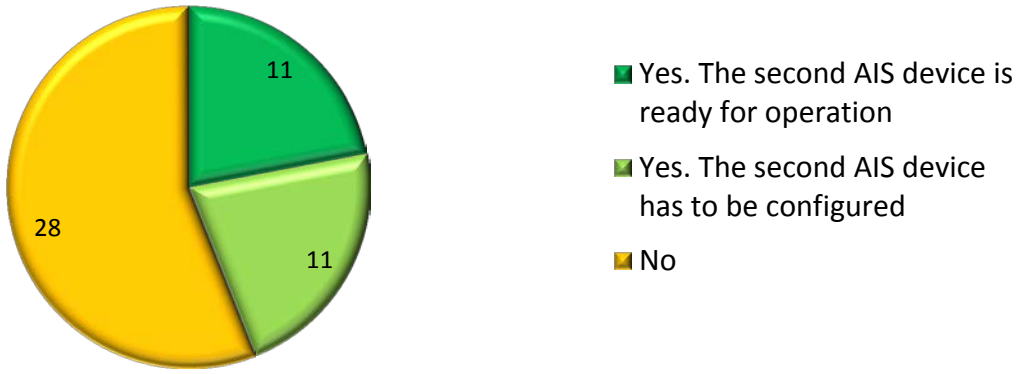
- 16% indicate problems during installation
- 10% indicate problems during configuration including firmware updates

Use of CCNR Installation guidelines:

- 78% know the CCNR Installation guidelines
- 68% use the checklist included in the guidelines
- 32% use their own or manufacturer's checklist

Number of companies	Number of repairs/replacements
8	0
4	1
6	2
4	3
1	4
2	5
1	6
4	10
1	18
1	20
4	25
1	30
1	35
3	50
1	55
1	96

Did you install a second Inland AIS device for redundancy?



Delay necessary to repair

Skippers:
The deadline of 48 hours too short and particularly difficult on weekends

Specialist repair companies cannot always guarantee to get to a location within 48 hours

Time to repair the Inland AIS device

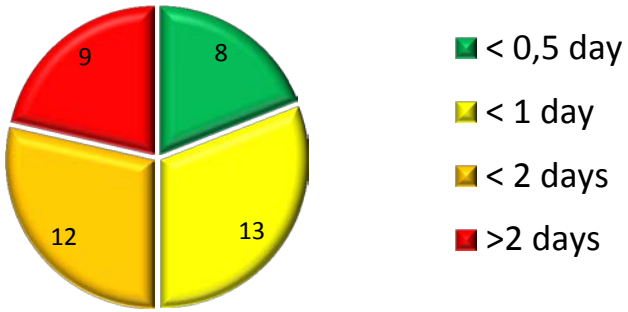
Time needed to repair	Number of respondents
≤48 hrs	147
48 – 72 hrs	36
72 – 96 hrs	21
≥96 hrs	102

Time to repair Electronic chart display system

Time needed to repair	Number of respondents
≤48 hrs	152
48 – 72 hrs	17
72 – 96 hrs	13
≥96 hrs	30

Installers:
42 % installers could not keep time limit (48 h)
58 % had no problems to keep the time limit

What is the average time to repair an Inland AIS device so that it sends its radio signal again (including your travel time)?



Authorities and police services:
In majority agree with the 48 h time limit for repair

05 PRIVACY

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Privacy aspects

Main concerns of skippers:

AIS websites

Violation of privacy and control by authorities

Competition clause

Criminal abuse such as burglary

Promises of government organisations

Misuse by shippers and freight companies

06 FURTHER STEPS

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Further steps:

- One document = results + conclusions + recommendations?

- Too much information → split the work in two phases:
  - Report A = results of the questionnaire
  - Report B = conclusions and recommendation

- Report A:
  - adoption by CCNR plenary session December 6th 2017

- Report B:
  - under way
  - first draft available for discussion
  - probably adoption by plenary session in spring 2018

THANK YOU FOR YOUR ATTENTION